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TITLE: Relationship of Neurocognitive Function to Breast Cancer Treatment and Induced Menopause

PRINCIPAL INVESTIGATOR: Amy L. Kenefick, Ph.D.

CONTRACTING ORGANIZATION: University of Connecticut
                              Storrs, CT 06269-2026

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14. ABSTRACT:

This clinical nurse research award builds directly on the principal investigator's extensive clinical background in women's health and primary care by facilitating her transition from geriatric research to breast cancer research. The overall purpose of this award is to provide training for the development of a career in breast cancer research. The proposed training plan will lead to advanced skills in research design, data management and analysis and in working with interdisciplinary research teams to improve outcomes of care of patients with breast cancer. The purpose of the research is to (1) describe NCF in women undergoing chemotherapy and in those undergoing surgically-induced menopause; (2) identify changes in NCF over time; (3) describe nature, severity, onset, duration, persistence of changes; (4) identify relationship between NCF and chemotherapy, menopause, symptom distress and functional status.

15. SUBJECT TERMS
Cognition, Menopause, Symptoms, Quality of Life, Breast Cancer

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INTRODUCTION: This clinical nurse research award builds directly on the applicant's extensive clinical background in women's health and primary care by facilitating her transition from geriatric research to breast cancer research. The overall purpose of this award is to provide training for the development of a career in breast cancer research. The proposed training plan will lead to advanced skills in research design, data management and analysis and in working with interdisciplinary research teams to improve outcomes of care of patients with breast cancer. The purpose of the research is to (1) describe NCF in women undergoing chemotherapy and in those undergoing surgically-induced menopause; (2) identify changes in NCF over time; (3) describe nature, severity, onset, duration, persistence of changes; (4) identify relationship between NCF and chemotherapy, menopause, symptom distress and functional status.

BODY: Three courses in advanced research methods have been completed. Institutional review board approval for the study has been obtained. The research assistant has been trained. Due to personnel changes at the data collection site, the study needed to be renegotiated. We have begun subject recruitment. In order to enhance recruitment we are seeking IRB approval to open an additional recruitment site.

KEY RESEARCH ACCOMPLISHMENTS: No scientific findings yet.

REPORTABLE OUTCOMES:

Completed courses at Yale School of Epidemiology and Public Health

BIS 625a, Categorical Data Analysis. This course presents methods for analyzing categorical data in public health, epidemiology, and medicine. Topics include discrete distributions, log-linear models, and logistic regression. Emphasis is placed on the application of the methods and the interpretation of results by applying the techniques of a variety of data sets.

BIS 628b, Longitudinal Data Analysis. This course covers methods for analyzing data in which repeated measures have been obtained for individuals over time. Different methods are discussed to handle both continuous and discrete longitudinal response data. Both subject-specific and population averaged approaches are covered (with particular reference to capturing the heterogeneity between different individuals). Some of the approaches covered include linear, nonlinear, and generalized mixed effects models, as well as generalized estimating equations. The course also covers exploratory methods, approaches for handling missing data, and possibly transition models and advanced topics such as multivariate longitudinal responses, nonparametric longitudinal responses, the joint consideration of longitudinal and survival data, and the joint consideration of longitudinal and spatial data. Emphasis is placed on applying the methods, understanding underlying assumptions, and interpreting results.

BIS 561b, Advanced Topics and Case Studies in Multicenter Clinical Trials. This course addresses advanced issues related to the design, conduct, monitoring, and analysis of multicenter randomized clinical trials. Topics include organizational, regulatory, and human rights issues; an overview of design strategies; advanced topics in sample size estimation and monitoring; data management and quality assurance procedures; cost-effectiveness and quality of life; and case studies of vaccine trials, factorial trials, primary and secondary prevention trials, large simple trials, strategy trials, and cost-effectiveness. The case studies include many of the classical and landmark clinical trials, such as the polio vaccine field trial, Physicians Health Study, and the trials of AZT for the treatment of AIDS.

Manuscripts

Kenefick, A.L. and McCorkle, R. (in preparation) Functional outcomes in older women after surgical treatment for breast cancer.

Kenefick, A.L., Swinney, J., and McCorkle, R. (in preparation). Racial disparity in symptom distress following breast cancer surgery.

Jones, B.A., Kenefick, A. L., Zinggeler, J. M., Dubrow, R., and Kasl, S.V. (under review). Delay, race, and breast cancer stage at diagnosis.

Hegedus, K. S. and Kenefick, A. L. (in press). Strategies for teaching aesthetics to undergraduate nursing students. *International Journal for Human Caring.*

Kenefick, A.L., Schulman-Green, D., McCorkle, R. (in press). Decision-making in pain management using the model of sequential trials. *Alzheimer's Care Quarterly*,

Kenefick, A.L. (2006). Patterns of symptom distress in older women after surgical treatment for breast cancer. *Oncology Nursing Forum, 33*(2):327-336.

Abstracts

Kenefick, A. L. (2005). Relationship of neurocognitive function to breast cancer treatment and induced menopause, abstract published in Proceedings of Era of Hope, Department of Defense Breast Cancer Research Program Meeting, 99.

Kenefick, A. (2005). Patterns of symptom distress in elderly women with breast cancer, Virginia Henderson International Library, http://www.nursinglibrary.org

Presentations

Cognitive Changes in Patients with Cancer, Yale University School of Nursing, April 4, 2006.

Quality of Life Assessment in Cancer Clinical Trials, The Carole and Ray Neag Comprehensive Cancer Program: Second Annual Research Retreat, Water's Edge Resort & Spa, Westbrook, CT, 11/5/2005

Researching Symptom Experience Following Surgical Treatment of Breast Cancer, University of Connecticut Health Center, 5/19/2005

Grant funded based on work supported by this award

Translational Research in Breast Cancer Survivorship, Pauline A. Toner Fund, University of Connecticut,$5000

Employment or research opportunities applied for and/or received based on experience/training supported by this award.

Granted joint appointment as Assistant Professor, School of Medicine, University of Connecticut

Member, American Cancer Society Institutional Grant Review Board UCONN Health Center

Member, Intercampus Interdisciplinary Oncology Program Steering Committee

CONCLUSION: A one year no cost extension was approved. Subject recruitment has begun. An additional recruitment site will be opened. Coursework in advanced research methods has been completed. Courses in cognitive psychology and transdisciplinarity will be taken in year three.

APPENDICES:
- ☐ Patterns of symptom distress in elderly women with breast cancer, Eastern Nursing Research Society Conference Abstract
- ☐ Curriculum Vitae
- ☐ Patterns of Symptom Distress in Older Women After Surgical Treatment for Breast Cancer, full article
- ☐ Joint Appointment, University of Connecticut School of Medicine
- ☐ Toner Grant Award Letter
- ☐ Abstract, Department of Defense Breast Cancer Research Program Meeting

ADVANCED SEARCH

Printer-friendly version

Patterns of symptom distress in elderly women with breast cancer

Conference Sponsor: **Eastern Nursing Research Society**
Conference Year: **2005**

Purpose. The purpose of this study was to describe patterns of subjective symptom distress over time in elderly women receiving surgical treatment for breast cancer and to examine the relationship of selected patient and clinical characteristics to symptom distress. Methods. Subjects were from a large mid-Atlantic teaching hospital, 60 years or older, with definitive primary surgical treatment of breast cancer, a prognosis of greater than six months, discharged from the hospital with a physicianÆs order for follow up care related to one or more high technology, complex procedures or treatment. Data were collected on discharge from the hospital and at 3 and 6 months later. Symptoms measured were frequency and severity of nausea, appetite, insomnia, frequency and severity of pain, fatigue, bowel pattern, concentration, appearance, breathing, outlook, and cough. Results. The most commonly occurring symptoms at each of the three points in time were fatigue, outlook and frequency of pain. Fatigue was consistently the most severe symptom, followed by pain frequency, then outlook. Subjects with nausea were likely to experience distress related to appetite, insomnia, fatigue, bowel pattern and outlook. Frequency and severity of pain correlated strongly, as did pain and fatigue, and fatigue with concentration and outlook. At the time of hospital discharge distress related to appearance and outlook was associated with distress due to concentration. Intensity of distress was independent of age, length of stay, number of comorbidities, religion, marital status and income. Conclusions and Implications for advancing the nursing research agenda or improving quality of care. Fatigue, outlook and frequency of pain remained important contributors to total symptom distress throughout the six months, independent of demographic variables, comorbidity, and length of hospitalization. Future research areas include the meaning of symptoms to patient, effect of symptom distress on functional status, and the effect of targeted interventions on individual symptoms and groups of symptoms.

Primary Investigator
Amy Kenefick, RN, PhD

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University of Connecticut

Title
Assistant Professor, School of Nursing

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Secondary Investigators

Amy Laufer Kenefick, PhD, APRN, BC
Associate Professor, School of Nursing
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Storrs, CT 06269-3044
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EDUCATION
BA. Demography. University of Massachusetts at Amherst, 1975
BSN. Nursing, Cornell University, New York, 1977.
MSN. Nursing, University of Kentucky, Lexington, 1981.
PhD. Nursing, University of Massachusetts at Amherst and Worcester, 1999.
Postdoctoral Fellowship. School of Nursing, Yale University, 2002-2003
Special Student. Department of Epidemiology and Public Health, Yale University, 2005-2006

RESEARCH AND TEACHING INTERESTS
Quality of life outcomes in clinical trials, breast cancer, advanced practice nursing, nursing theory

LICENSURE AND CERTIFICATION
CT: Registered Nurse, Advanced Practice Registered Nurse
MA: Registered Nurse/Midwife, Registered Nurse/Practitioner
Certified Nurse Midwife, American College of Nurse Midwives
Family Nurse Practitioner, American Nurses Credentialing Corporation

ACADEMIC APPOINTMENTS
Assistant Clinical Professor, School of Medicine, University of Connecticut, 2006-present
Associate Professor, School of Nursing, University of Connecticut, Storrs, 2005-present.
Assistant Professor, School of Nursing, University of Connecticut, Storrs, 1999-2005.
Clinical Assistant Professor, School of Nursing, University of Massachusetts, Amherst, 1998-1999
Adjunct Assistant Professor, School of Nursing, University of Massachusetts, Amherst, 1995-1998
Clinical Instructor, School of Nursing, Yale University, 1985-1986
Clinical Preceptor, School of Nursing, University of Arizona, Tucson, 1985-1986
Clinical Preceptor, School of Nursing, University of Colorado, Denver, 1984-1986
Clinical Preceptor, College of Medicine and Dentistry, Newark, NJ, 1984-1985
Clinical Instructor, School of Medicine, Boston University, Boston, MA, 1983-1986

CLINICAL EXPERIENCE
Nurse Practitioner, Jewish Geriatric Services, Longmeadow, MA, 1991-1998
Nurse Midwife, OB-GYN Associates, Providence, RI, 1981-1983
Staff Nurse, Mary Breckinridge Hospital, Hyden, KY, 1978-1979
Staff Nurse, New York Hospital, NY, NY, 1977-1978

ADMINISTRATIVE EXPERIENCE
Nursing Supervisor, Jewish Nursing Home of Western MA, Longmeadow, 1990-1991
Director of Midwifery, Department of Health and Hospitals, Boston, MA, 1983-1986

AWARDS AND HONORS

Mary Lawrence Research Development Award, University of CT, 2004
Mary Lawrence Research Development Award, University of CT, 2001
American Nurses Foundation Scholar, 2000
Phi Kappa Phi Honor Society, 1997
Massachusetts Long Term Care Foundation Award, 1997
Traineeships for Doctoral Study, 1997-1999
Sigma Theta Tau Nursing Honor Society, 1977
Commonwealth Scholar, University of MA, 1971

FUNDING

Title	Agency	Type & #	Period	Total Direct Costs	Role
Translational Research in Breast Cancer Survivorship	University of Connecticut	Pauline A. Toner Fund	2006	$5000	PI
Relationship of Neurocognitive Function to Breast Cancer Treatment and Induced Menopause	US Army Medical and Materiel Command, Breast Cancer Research Program	Clinical Nurse Research Award, W81XWH-04-1-0528	2004-2007	$199,997	PI
Research Training Program in Breast Cancer	US Army Medical and Materiel Command, Breast Cancer Research Program	DAMD 17-00-1-0509, Dr. Ruth McCorkle,PI	2002-2003	$38,712	Post-doctoral Fellow
Identification of Pain in Cognitively Impaired Elderly	American Nurses Foundation		2000-2002	$3470	PI
Identification of Pain in Cognitively Impaired Elderly	Sigma Theta Tau		2000	$500	PI
Data Management for Pain and the Functional Status of Nursing Home Residents	University of Connecticut		2000	$1000	PI

PUBLICATIONS

Kenefick, A.L. and McCorkle, R. (in preparation) Functional outcomes in older women after surgical treatment for breast cancer.

Kenefick, A.L., Swinney, J., and McCorkle, R. (in preparation). Racial disparity in symptom distress following breast cancer surgery.

Jones, B.A., Kenefick, A. L., Zinggeler, J. M., Dubrow, R., and Kasl, S.V. (under review). Delay, race, and breast cancer stage at diagnosis.

Hegedus, K. S. and Kenefick, A. L. (in press). Strategies for teaching aesthetics to undergraduate nursing students. *International Journal for Human Caring.*

Kenefick, A.L., Schulman-Green, D., McCorkle, R. (in press). Decision-making in pain management using the model of sequential trials. *Alzheimer's Care Quarterly*,

Kenefick, A.L. (2006). Patterns of symptom distress in older women after surgical treatment for breast cancer. *Oncology Nursing Forum, 33*(2):327-336.

Kenefick, A. L. (2005). Relationship of neurocognitive function to breast cancer treatment and induced menopause, abstract published in Proceedings of Era of Hope, Department of Defense Breast Cancer Research Program Meeting, 99.

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Kenefick, A.L. (2005). Commencement. *International Journal of Human Caring, 9*(1):43-44.

Kenefick, A.L. and Schulman-Green D. (2004). Caring for cognitively impaired nursing home residents with pain. *International Journal of Human Caring, 8*(2): 32-40.

Kenefick, A.L. (2004). Widow's work. *International Journal of Human Caring, 8*(1): 67-68.

Kenefick, A.L. (2004). Pain Treatment and Quality of Life: Reducing Depression and Improving Cognitive Impairment. *Journal of Gerontological Nursing, 30*(5): 22-29.

Chen, C., Kenefick, A., Tang, S.T., McCorkle, R. (2004). Utilization of comprehensive geriatric assessment in cancer patients. *Critical Reviews in Oncology and Hematology, 49*(1): 53-67.

Kenefick, A.L. (2003). On Propagation. *International Journal of Human Caring, 7*(1): 56-57.

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Kenefick, A. L. (2001) Making Decisions About The Nursing Home Resident With Pain, abstract reprinted in the Virginia Henderson International Library, http://www.nursinglibrary.org

Kenefick, A. L. (1999). Pain and the functional status of nursing home residents. *Dissertation Abstracts International, 60*, 11B. (UMI No. 9950171)

Kenefick, A. L. (1999). Low caloric intake predicted mortality for geriatric patients in hospital [commentary on (1998) Incalzi R. A., Capparella I., Gemma A. et al. Inadequate caloric intake: a risk factor for mortality of geriatric patients in the acute-care hospital. *Age Aging*, *27*(3), 303-10] *Evidence-Based Nursing*, *2*(1), 26.

Laufer, A. (1990). Breastfeeding: Toward resolution of the unsatisfying birth experience. *Journal of Nurse-Midwifery, 35*(1), 42-45.

Laufer, A. (1990). [Review of the book *VBAC sourcebook*]. *Journal of Nurse-Midwifery, 35*(1), 62.

Laufer, A. (1989). [Review of the book *The complete cervical cap guide*]. *Journal of Nurse-Midwifery, 34*(1), 52.

Laufer, A. (1988). [Review of the book *A flower garden: All about it, the diary of a woman's thoughts after cesarean birth*]. *Journal of Nurse-Midwifery*, *33*(5), 241.

Laufer A., Hodenius V., Friedman L., Duncan N., Guy C., MacPherson S., Barrows N. (1987). Vaginal birth after cesarean section: Nurse-midwifery management. *Journal of Nurse-Midwifery, 32*(1), 41-47.

Laufer, A. (1986). [Review of the book *Breastfeeding success for working mothers*]. *Journal of Nurse-Midwifery, 31*(6), 299.

SELECTED PRESENTATIONS

Cognitive Changes in Patients with Cancer, Yale University School of Nursing, April 4, 2006.

Quality of Life Assessment in Cancer Clinical Trials, The Carole and Ray Neag Comprehensive Cancer Program: Second Annual Research Retreat, Water's Edge Resort & Spa, Westbrook, CT, 11/5/2005

Researching Symptom Experience Following Surgical Treatment of Breast Cancer, University of Connecticut Health Center, 5/19/2005

Patterns of Symptom Distress in Elderly Women with Breast Cancer. Poster, Distinguished Scholars Day, University of Connecticut, 4/14/ 2005

Patterns of Symptom Distress in Elderly Women with Breast Cancer. Paper, 17th Annual Scientific Sessions of the Eastern Nursing Research Society, 4/8/ 2005

Relationship of Neurocognitive Function to Breast Cancer Treatment and Induced Menopause, Neag Comprehensive Cancer Program, University of Connecticut Health Center, 12/16/ 2004

Innovative Program of Research in Breast Cancer, University of Connecticut School of Nursing Advisory Board and UConn Foundation, 10/1/ 2004

Questioning the Information on Delay and Racial Disparities in Breast Cancer Survival, Paper, Association of Women's Health, Obstetric and Neonatal Nurses Annual Convention, "Challenging the Status Quo" , 6/29/ 2004

Blaming the Victim? Blaming the System? The Relationship of Delay to Stage of Disease at the Time of Breast Cancer Diagnosis, Poster, Scholars' Day, University of Connecticut, 4/22/ 2004

Delay and Racial Disparity in Stage at Diagnosis in Women with Breast Cancer, Paper, 16th Annual Scientific Sessions of the Eastern Nursing Research Society, 4/3/2004

Caring About the Nursing Home Residents with Pain—What Nurses Do, Paper, International Association for Human Caring, Boston MA, 5/22/2002

The Model of Sequential Trials—How Nursing Home Nurses Treat Symptoms, Poster,

International Association for Human Caring, Boston MA, 5/22/2002
Making Decisions About the Nursing Home Resident with Pain, Paper, Hartford (CT) Hospital Research
    Utilization Conference, 10/2001
The Model of Sequential Trials—How Nursing Home Nurses Treat Pain, Poster, Annual Research
    Day, University of Connecticut, 5/7/2001
Making Decisions About the Nursing Home Resident with Pain, Paper, Sigma Theta Tau
    (Mu Chapter), Annual Research Day, Rocky Hill, CT, 4/26/2001
The Model of Sequential Trials—How Nursing Home Nurses Treat Pain, Poster, Eastern Nursing
    Research Society Annual Scientific Sessions, Atlantic City, NJ, , 4/1-3/2001
Pain Increases the Likelihood of Depression in Nursing Home Residents, Poster, Eastern Nursing
    Research Society Annual Scientific Sessions, Atlantic City, NJ, 4/1-3/2001
Making Decisions About the Nursing Home Resident with Pain, Paper, Eastern Nursing Research Society
    Annual Scientific Sessions, Atlantic City, NJ, 4/1-3/2001
Correlates of Depression in Nursing Home Residents—Implications for Prevention and
    Treatment, Paper, Sigma Theta Tau Nursing Honor Society, Beta Zeta Chapter,
    Northampton, MA, 3/8/2001
Correlates of Depression in Nursing Home Residents, Poster, Sigma Theta Tau
    Nursing Honor Society, Mu Chapter Induction, Storrs, CT, 12/3/2000
Correlates of Depression in Nursing Home Residents, Paper, Hartford (CT) Hospital Research Utilization
    Conference, 10/13/2000
Correlates of Depression in Nursing Home Residents, Poster, Second Annual
    Research Day, University of Connecticut School of Nursing, 5/8/2000
Pain and the Functional Status of Nursing Home Residents, Poster Presentation,
    Annual Meeting of the American Society Pain Management Nurses, Washington, DC, 4/16/1999
Alzheimer's Disease, Chronic Disease in Contemporary Literature, Paper, Sigma Theta Tau Research
    Day, University of Massachusetts School of Nursing, Amherst, 4/22/1998

TEACHING EXPERIENCE
Nursing 234, Clinical Science IV. Concepts from pharmacology, microbiology, pathophysiology, and
    nutrition as they relate to child bearing, child rearing families. 2001-2002
Nursing 236, Parent-Child Nursing. Functional health patterns and clinical decision-making related to the
    care of the child bearing, child rearing family. 2001-2002
Nursing 350, Nursing Science. Analysis of the current state of nursing science and the application of
    knowledge from this science and other disciplines to advanced nursing practice from historical,
    contemporary and futuristic perspectives. 2001-2004
Nursing 356, Nursing Theories and Patterns of Knowing. This survey course introduces the student to the
    art and science of nursing practice. It explores the historical, empirical, ethical, esthetical, and
    personal knowing aspects of nursing praxis. The legal, educational, regulatory, and financial
    world of nursing is examined. The major theorists influencing the development and advancement
    of the profession are explored. 2003-2006
Nursing 383, Primary Care I. Health promotion/disease prevention and the assessment and management
    of selected acute and chronic health problems, including respiratory, cardiovascular, and
    endocrine systems. For nurse-practitioner students. 2001
Nursing 384, Advanced Health Assessment. Principles and techniques of advanced physical assessment
    for nurse practitioner students. 1999, 2000
Nursing 385, Primary Care II, Assessment and management of selected acute and chronic health
    problems, focusing on endocrine, gastrointestinal, integumentary and genitourinary systems,
    women's health and behavioral health. 2005
Nursing 389, Primary Care Practicum I. Focus is health promotion/disease prevention and the clinical
    diagnosis and management of individuals experiencing common acute and chronic health
    problems of respiratory, cardiovascular, and endocrine systems. The role of the nurse in primary
    care is examined. Includes a seminar and 12 clinical hours per week. 2001
Nursing 392, Practicum in Advanced Practice Gerontological Nursing I. Focus is on health
    promotion/disease prevention and the clinical management of older adults experiencing common
    acute and chronic health problems of the respiratory, cardiovascular, and endocrine systems.
    Common clinical problems of older adults will be examined. Includes a seminar and 12 clinical

hours per week. 2000

SERVICE
University
        Dean Search Committee, School of Nursing, 2006-
        American Cancer Society Institutional Grant Review Board UCONN Health Center
        Intercampus Interdisciplinary Oncology Program Steering Committee, 2006-
        UCONN Health Center Breast Cancer Research Cooperative, 2005-
        Multicultural Diversity Faculty Trainer, Offices of Multicultural Affairs, and Diversity and Equity, University
                of Connecticut, 2004-2005

School
        Promotion, Tenure and Reappointment Committee, 2005-2006
        PhD Program Evaluation Committee, UCONN School of Nursing, 2005-2006
        PhD Admission and Progression Committee, 2003, 2005-2006
        Financial Oversight Committee, 2002-2003
        Curriculum and Courses Committee, 2002-2005
        Merit Committee, 2001-2002
        Faculty Recruitment and Selection Committee, 2000-2002
        Master of Science Admissions Committee, 2000-2001

Professional
        Research Advocacy Network, 2006-
        Connecticut Geriatric Education Consortium, 2005-
        Grant Reviewer, Alzheimer's Association, 2004-
        Advanced Nursing Research Special Interest Group, Oncology Nursing Society, 2002-
        Reviewer, Nursing Division, Lippincott Williams & Wilkins, Philadelphia, PA, 2002, 2004
        Professional Affairs Committee, Jewish Geriatric Services, Longmeadow, MA, 2002-
        Abstract Reviewer, Eastern Nursing Research Society, 2001-2003
        Client Services Committee, Jewish Geriatric Services, Inc., Longmeadow, MA, 2001-2002
        Grants Reviewer, American Society of Pain Management Nurses, 2000-2003
        Nominating Committee, Mu Chapter, Sigma Theta Tau, 2000-2001
        Research Committee, American Society of Pain Management Nurses, 1998-2003
        Professional Advisory Committee, Spectrum Home Health Care, Longmeadow, MA, 1994-2000.
        Health Care Consultant, Lubavitcher Yeshiva Academy Preschool, Longmeadow, MA, 1990-1996

Patterns of Symptom Distress in Older Women After Surgical Treatment for Breast Cancer

Amy Laufer Kenefick, PhD, APRN, BC

Purpose/Objectives: To describe patterns of symptom distress over time in older women receiving surgical treatment for breast cancer and to examine the relationship of selected patient and clinical characteristics to symptom distress.

Design: Secondary analysis of breast cancer data from a prospective, longitudinal study of older patients with several types of cancer.

Setting: Large mid-Atlantic teaching hospital.

Sample: 57 patients with breast cancer participated. Subjects had a mean age of 68 and were predominantly white, not Hispanic, married, Protestant, retired, and in stage I or II. A total of 55 subjects completed the study.

Methods: The Symptom Distress Scale was used. Data were collected on discharge and at three and six months postdischarge. Descriptive statistics, t test, analysis of variance, correlation coefficients, and stepwise multiple regression were analyzed.

Main Research Variables: Total symptom distress and 13 individual symptom scores.

Findings: Fatigue, frequency of pain, outlook, and insomnia consistently were most prevalent and severe. Symptoms decreased gradually. Younger, more educated, and married women experienced more distress.

Conclusions: Interactions among symptoms are complex. Later symptom distress may be predicted by early experience and demographic characteristics.

Implications for Nursing: Clinicians should inquire about symptom distress at each encounter, expect multiple symptoms, and anticipate greater symptom distress in patients who are younger, more educated, or married or living with a partner. In women with more severe, earlier symptom distress, nurses should intervene promptly. Research should determine interrelationships of symptoms and how they might be affected by contextual variables, describe critical attributes of the nurse-patient interaction that might mitigate symptom distress, characterize the relationship of symptom intensity and distress, clarify the mechanism of the relationship between marital status and symptom distress, and identify the effect of symptoms, individually and collectively, on survival and quality of life.

Key Points . . .

➤ Most new cases of invasive breast cancer occur in older women who will be treated with surgery.

➤ Fatigue, frequency of pain, outlook, and insomnia were the most distressing postsurgical symptoms reported and were experienced by more than half of the women throughout six months.

➤ Although individuals have unique patterns of postsurgical symptom distress, women who are younger, better educated, or married may experience greater distress.

➤ Later symptom distress can be predicted from knowledge of earlier symptom distress.

insomnia, mood disturbances, fatigue, and difficulties with concentration (Carpenter et al., 2004; Cimprich, 1999; Nail & Winningham, 1995). Treatment-related fatigue, sleep disturbances, pain, hot flashes, nausea, and vomiting occur during and after breast cancer treatment (Bower et al., 2000; Graf & Geller, 2003). Following treatment, in addition to the previously listed symptoms, women report lymphedema and decreased arm mobility, sexual difficulties, problems with memory and attention, being unhappy with their appearance, and having hot flashes, aches and pains, and muscle stiffness (Ganz et al., 2004).

Symptom management is a core aspect of nursing practice. Understanding is necessary to plan and carry out effective interventions to relieve symptoms. Measurement, using reliable and valid instruments, allows nurses to learn about the frequency and intensity of symptoms, how the phenomena change over time, and their relationship to other variables.

The purpose of the current study was to describe the patterns of symptom distress over time in older women receiving surgical treatment for breast cancer and to examine the

Breast cancer, the leading cause of cancer deaths among women worldwide (World Health Organization, 2006), is the most commonly diagnosed invasive cancer among women in the United States (Jemal et al., 2005). Of the approximately 200,000 American women diagnosed with invasive breast cancer each year, about 78% are older than 50 years (Department of Defense, 2005). Most of the women who seek treatment for breast cancer will undergo surgery, either lumpectomy or mastectomy with or without axillary node dissection.

Women experience an array of symptoms throughout the course of their diagnosis, treatment, and recovery, such as

relationship of selected patient and clinical characteristics to symptom distress. Because breast cancer incidence and mortality increase with age (Lacey, Devesa, & Brinton, 2002), an understanding of the nature of the symptom experience of older women following initial surgical treatment for breast cancer is necessary to plan interventions that are appropriate, acceptable, and effective in mitigating symptom distress and improving quality of life. Such understanding will allow identification and remediation of the difficulties that older women have at home, potentially diminishing undesirable effects of burdensome symptom distress.

Related Literature

Symptoms

Symptoms are perceived indicators of change in healthy functioning as experienced by patients (Hegyvary, 1993). They are multidimensional, having subjective, perceptional, and experiential characteristics (Dodd, Janson, et al., 2001; Teel, Meek, McNamara, & Watson, 1997). These characteristics include both the physiologic sensations that signal patients that some internal condition is different and the interpretive processes that motivate patients to construct meanings for the symptoms and decide how to respond to them (Dabbs et al., 2004). Symptoms disrupt function, most notably social function and communication. Symptom outcomes include functional and emotional status, healthcare service use, mortality, morbidity, financial status, self-care, and self-management (Caldwell & Miaskowski, 2000; Dodd, Miaskowski, & Paul, 2001; Kenefick, 1999, 2004; Reishtein, 2005).

Symptom Distress

Symptom distress is the degree of perceived discomfort experienced in relation to a symptom (McCorkle & Young, 1978). Symptom distress affects the quality of life and survival of patients with cancer (Fu, LeMone, & McDaniel, 2004), and increased symptom distress has been associated with increased mortality (Degner & Sloan, 1995). The term *symptom distress* implies more than intensity. Symptom distress reflects symptom experience. The extent of symptom distress is determined by a person's sense of departure from healthy function, sensation, or experience in combination with the individual's interpretation of the importance of these events (McDaniel & Rhodes, 1995). The experience of multiple simultaneous symptoms has a synergistic effect on symptom distress (Lenz, Pugh, Milligan, Gift, & Suppe, 1997). Symptom distress is affected by and influences activities performed by patients or their advocates to relieve the symptom or prevent it from occurring. Symptom distress is an outcome indicator for symptom management.

Methods

Design

This article reports a secondary analysis of data from a larger study of the effect of a short-term nursing intervention on the quality of life of older patients newly diagnosed with several types of cancer (McCorkle et al., 2000). Secondary analysis contributes to knowledge development by allowing an opportunity for the researcher to examine previously collected data for a new purpose. Secondary analysis is an efficient and economic technique used to explore a particular

subgroup of the original sample (Polit & Hungler, 1995). The current study's analysis focuses on the symptom distress of older women with breast cancer. The purpose of the present analysis is to describe the patterns of symptom distress over time in older women receiving surgical treatment for breast cancer and to examine the relationship of selected patient and clinical characteristics to symptom distress. In contrast, the purpose of the parent study was to examine the effect of home nursing care interventions on clinical and psychosocial outcomes among 375 participants with lung, breast, colorectal, head and neck, prostate, urologic, or gynecologic cancer. The parent study's design was longitudinal, with data collected from the same subjects on discharge from the hospital and three and six months postdischarge by the same researcher using standardized procedures and instruments. In this type of study, the same group of subjects supplies data at multiple points in time, allowing patterns of change to be revealed. This approach is useful to identify the effect of conditions and characteristics on health outcomes (Polit & Hungler).

Sample

The original study had 375 subjects aged 60–92 years who were newly diagnosed with solid cancers. The subjects were recruited from a large mid-Atlantic teaching hospital, and institutional review board approval and subject informed consent were obtained. Subjects for the study described in this article were those from the original study who had breast cancer. The patients had had definitive primary surgical treatment for breast cancer and a prognosis of greater than six months. They were 60 years of age or older and discharged from the hospital with a physician's order for follow-up care related to one or more high-technology, complex procedure or treatment.

Instrument

The outcome measure of interest in this study was symptom distress (i.e., the degree of discomfort from specific symptoms as reported by the patient). The **Symptom Distress Scale** (McCorkle & Young, 1983) is a reliable and valid measure of this outcome (McCorkle, Cooley, & Shea, 1998). The scale contains 13 cards, each representing a different symptom and including a five-point Likert-type scale of distress severity. Items used in the scale are appetite, insomnia, frequency of pain, severity of pain, fatigue, bowel pattern, concentration, appearance, breathing, outlook, cough, frequency of nausea, and severity of nausea. The items reflect symptoms described as follows. *Appetite* reflects a subject's enjoyment of food. *Insomnia* reflects the ability to initiate and maintain sleep. *Frequency of pain* ranges from almost never to almost constantly. *Severity of pain* ranges from very mild to almost unbearable. *Fatigue* reflects frequency and severity of tiredness or exhaustion. *Bowel pattern* reflects discomfort related to changes in the usual bowel pattern. *Concentration* ranges from the normal ability to concentrate to perceived inability to concentrate at all. *Appearance* ranges from basically unchanged to drastically changed and includes elements of concern related to appearance. *Breathing* ranges from usually breathing normally to almost always having severe difficulty. *Outlook* includes being fearful, worried, and scared. *Cough* ranges from seldom to frequent, persistent, and severe. *Frequency of nausea* ranges from seldom to continually, whereas *severity of nausea* ranges from mild to being as sick as possible. For each

item, the scale of distress severity ranges from 1 (normal or no distress) to 5 (extreme distress). Subjects respond by circling the number that corresponds to their experience for that day. A total symptom distress score is the unweighted sum of the 13 items, ranging from 13–65. In this article, data related to individual items are reported using the item names found in the Symptom Distress Scale.

Statistical Procedures

Data were analyzed using the SPSS® (SPSS Inc., Chicago, IL) statistical package. Patient-related and clinical data were summarized with descriptive statistics, including frequencies, means, and standard deviations. Analysis of variance and t tests were used to assess differences in mean symptom scores among groups of subjects defined by demographic or clinical characteristics. Paired t-test analysis was used to examine symptom distress over time. Correlation coefficients identified relationships between symptoms. Stepwise multiple regression analysis was used to identify predictors of symptom distress.

Results

Description of the Sample

The study began with 57 patients with breast cancer. Attrition was minimal, with the loss of one subject by the second data collection point and an additional subject by the third data collection point. The sample was predominantly white, not of Hispanic origin, married, Protestant, and retired and did not live alone. The average subject was 68 years old, had completed 13 years of education, and had an annual income of more than $35,000 per year. Most of the subjects had been diagnosed with stage I or II breast cancer and two comorbidities. On average, they spent nearly three days in the hospital for a surgical treatment and experienced two initial complications of treatment (see Table 1).

Symptom Distress Over Time

Mean total symptom distress scores were 23.81 (SD = 6.60) at discharge, 20.52 (SD = 5.04) at three months postdischarge, and 18.60 (SD = 4.50) at six months postdischarge. Scores remained near the upper limit of the range defined in the literature as "low" (i.e., 13–24) (McCorkle et al., 1998). The decrease in total symptom distress was statistically significant ($p < 0.01$) between each of the three measurement points. From discharge to three months postdischarge, the difference was 3.34 (SD = 7.11). From three to six months postdischarge, the mean change was less in amount and variability (1.98, SD = 4.63). The greatest mean change and greatest variability were noted when comparing the discharge scores to the six-month scores (5.45, SD = 7.30) (see Figure 1).

The mean number of symptoms per subject remained the same (six) at discharge and three months, dropping to four at six months postdischarge. At each of the three points, the most severe and frequently occurring symptoms were fatigue, frequency of pain, outlook, and insomnia, in that order (see Figure 2). Relative severity of the four symptoms remained constant over time. Absolute severity of the four symptoms diminished over time (see Figure 3); however, more than half of the sample continued to experience the symptoms throughout the study period. Fatigue distress diminished significantly (total mean difference = 0.40, $p < 0.04$) from discharge to

Table 1. Demographic Characteristics of the Sample

Variable	n	%
Race		
White, not Hispanic	35	61
Black	21	37
Asian	1	2
Martial status		
Never married	5	9
Married	30	53
Separated or divorced	5	9
Widowed	17	30
Religion		
Protestant	28	49
Catholic	17	30
Jewish	8	14
None	3	5
Other	1	2
Employment		
Full-time	12	21
Part-time	4	7
Unemployed	2	4
Disabled	3	5
Retired	29	51
Homemaker	7	12
Lives alone		
No	41	72
Yes	16	28
Income ($)		
Less than 35,000	28	49
More than 35,000	29	51
Stage of disease		
I or II	54	95
III or IV	3	5

N = 57

Note. Because of rounding, not all percentages total 100.

six months postdischarge but not from discharge to three months postdischarge or from three to six months postdischarge. Distress cause by pain frequency (total mean change = 0.49, $p < 0.05$) and outlook (total mean change = 0.60, $p < 0.01$) showed the same pattern. Distress caused by insomnia decreased significantly from discharge to three months postdischarge (mean difference = 0.39, $p < 0.05$) and from discharge to six months postdischarge (mean difference = 0.62, $p < 0.01$), but not appreciably from three to six months.

Correlations Among Symptoms

Pearson correlations with a p value of less than 0.05 were noted at all three times (see Table 2).

Appearance: Distress caused by appearance correlated with distress resulting from outlook at all three measurement points.

Appetite: Subjects with distress related to appetite were likely to experience a large number of other symptoms, including insomnia, nausea, fatigue, bowel pattern, and distress caused by concentration, appearance, and outlook.

Fatigue: Subjects with fatigue were likely to experience distress caused by bowel pattern, concentration, and outlook. Four of the six correlates of fatigue at three months were associated with the digestive system: appetite, bowel pattern, nausea frequency, and nausea severity.
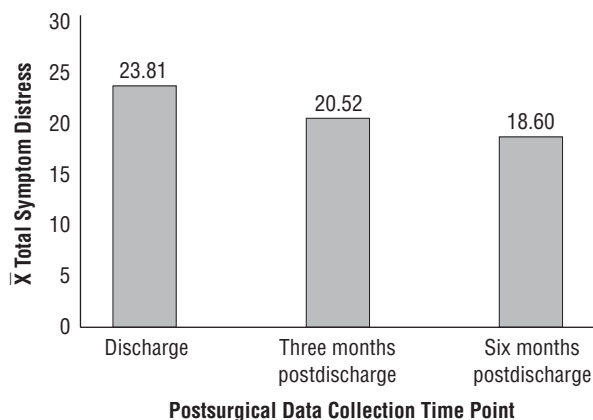
Figure 1. Mean Total Symptom Distress Over Time

Insomnia: Subjects with insomnia were likely to experience distress related to pain frequency and severity, fatigue, bowel pattern, concentration, appearance, breathing, and outlook. Individuals expressing distress related to insomnia by six months postdiagnosis were likely to have any of nine different symptoms.

Nausea: Significant correlations were found between severity and frequency of nausea at each of the three measurement points. Subjects with nausea were likely to experience distress related to appetite, insomnia, frequency of pain, fatigue, bowel pattern, breathing, and outlook.

Outlook: Outlook was associated with distress related to concentration and appearance at all three measurement points. Subjects distressed by their appearance on discharge from the hospital also expressed distress related to outlook. Distress related to outlook at six months was associated with distress caused by appearance, appetite, bowel pattern, concentration, insomnia, nausea frequency, and pain frequency.

Pain: Frequency and severity of pain correlated strongly with one another. Subjects with pain were likely to report distress related to fatigue, concentration, breathing, and outlook.

Persistent correlations: In addition to severity or frequency of pain and nausea, three sets of correlations persisted over the three measurement times: (a) concentration and fatigue, (b) concentration and outlook, and (c) appearance and outlook. The complexity of interactions among symptoms is not well described by the calculation of correlation coefficients.

Relationship of Selected Characteristics to Symptom Distress

Education correlated with total symptom distress at discharge ($r = 0.34$, $p < 0.01$), whereas age correlated negatively with total symptom distress at discharge ($r = -0.27$, $p < 0.05$). Thus, more education and younger age were associated with greater symptom distress at discharge.

Analysis of variance and t tests were used to assess differences in mean symptom scores among groups of subjects defined by demographic or clinical characteristics. The only significant findings concerned the analysis of data on marital status. To achieve adequate group size to allow analysis, groups were collapsed. Subjects who never married, were separated or divorced, or were widowed were combined into one group called "single" for purposes of analysis. Subjects who were married or living with a partner were combined into a group called "married" for the purpose of analysis. At six months postdischarge, married subjects showed a greater variability in symptom distress and significantly higher mean scores for total symptom distress ($p = 0.0001$), insomnia ($p = 0.0001$), frequency of pain ($p = 0.026$), fatigue ($p = 0.039$), bowel pattern ($p = 0.032$), and concentration ($p = 0.019$). No significant difference was found in total symptom distress among single and married subjects at discharge and three months postdischarge, but married subjects reported significantly more distress related to frequency of nausea ($p = 0.018$) and frequency of pain ($p = 0.018$) at three months postdischarge (see Table 3).

Predicting Variance in Symptom Distress

Stepwise multiple regression analysis revealed a statistically significant model for predicting total symptom distress at each of the three measurement points. Education predicted 11.5% ($p = 0.01$) of the variance in symptom distress at discharge. The symptom distress score at discharge predicted 8.1% ($p = 0.03$) of the variance in symptom distress at three months postdischarge, and the symptom distress score at three months predicted 29.5% ($p < 0.00$) of the variance in symptom distress at six months postdischarge (see Table 4).
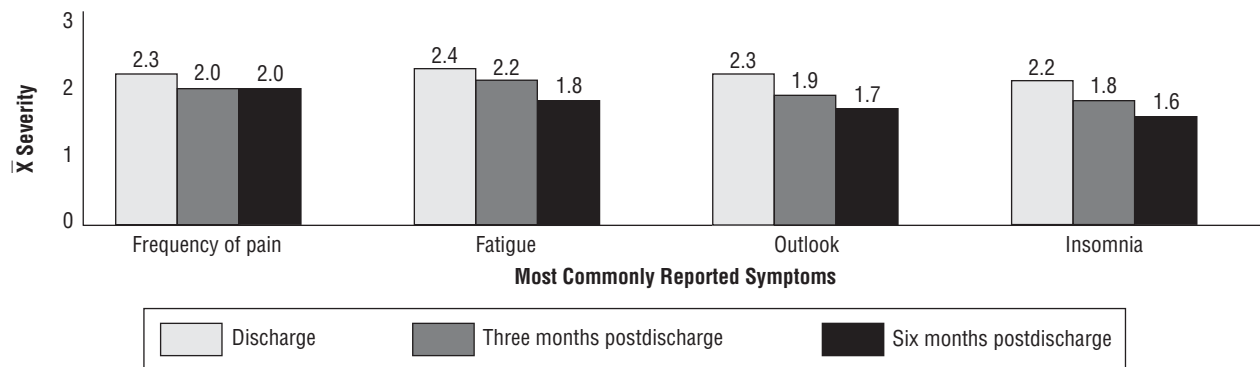
Discussion

Symptom Prevalence and Intensity

At all three measurement points, fatigue, frequency of pain, outlook, and insomnia had the highest mean scores,
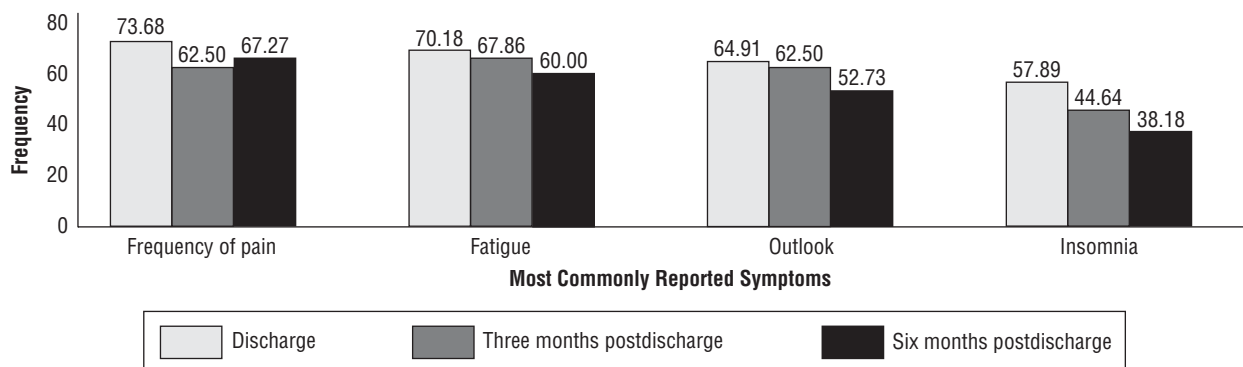
Figure 2. Frequency of the Most Commonly Reported Symptoms Over Time

Figure 3. Mean Severity of the Most Commonly Reported Symptoms Over Time

representing primary sources of symptom distress. Pain and fatigue commonly are ranked as the most distressing symptoms by patients with cancer of other types (e.g., lung, breast, genitourinary system) (Cooley, Short, & Moriarty, 2003). These findings are similar to the lack of energy, worry, pain, and nausea reported by seriously ill patients with cancer (Tranmer et al., 2003). Findings have been similar in patients posthysterectomy who reported pain, sleep disturbances, depressed mood, and anxiety (Kim & Lee, 2001) and in patients with early-stage breast cancer who reported fatigue, appearance, insomnia, and concentration (Boehmke, 2004). Among patients with lung cancer, fatigue has been reported as the most frequent, intense, and limiting symptom (Gift, Jablonski, Stommel, & Given, 2004). Insomnia is a well-known problem among newly diagnosed or recently treated patients with cancer (Savard & Morin, 2001). In addition, pain is a common postoperative phenomenon.

Extent of Symptom Distress Over Time

Levels of symptom distress in the current study's sample generally were low and diminished over the six months of study data. Although the absolute intensity of distress related to fatigue, frequency of pain, insomnia, and outlook decreased over time, the symptoms continued to be experienced widely throughout the study period, each affecting half to two-thirds of the subjects at any time. However, the number of symptoms decreased during the period of the study.

The greatest decrease in total symptom distress occurred from hospital discharge to the three-month measure. Consistent with this research, other studies have shown that symptom distress levels in women with early-stage breast cancer generally are low. For example, a study of women prior to their first chemotherapy treatment showed a mean symptom distress score of 23 with a standard deviation of 4.2 (Boehmke, 2004). The present study of women following initial surgical treatment demonstrated a similar mean symptom distress score at the first measurement point (23.8) but showed greater variability at each of the three data collection points (standard deviations of 6.50, 5.04, and 4.50). Mean symptom distress scores at all three measurement points in this study (23.81, 20.52, 18.60) were higher than the pretreatment score ($\overline{X}$ = 18.10) reported for women older than 55 by Cimprich (1999).

Trends in Significant Correlations Among Symptoms Over Time

A number of significant correlations among symptoms were noted, suggesting a complex network of symptom experience. Similar to this study, other research has demonstrated correlations between severe fatigue and significantly higher levels of depression, pain, and sleep disturbance (Bower et al., 2000). The nature of the complex interactions among these symptoms remains unclear; however, the pattern of the interactions likely varies from one individual to another.

Influence of Patient or Clinical Characteristics

Age and education: The current study found that older subjects reported less total symptom distress at the initial measurement than did younger subjects. Other researchers also have found a negative correlation between age and symptom distress (Degner & Sloan, 1995), with a larger number of older patients reporting less symptom distress. Whether this is an issue of perception or appraisal is unclear. Decreased perception of pain has been noted among older patients with a variety of diagnoses, and research has demonstrated slowing of pain signal processing as well as decreased sensitivity to stimuli (Fass, Pulliam, Johnson, Garewal, & Sampliner, 2000; Moore & Clinch, 2004). Diagnosis of and treatment for breast cancer may have held different meaning and significance for the younger women in this study, contributing to greater expression of symptom distress when compared to the older women. Older women may have had more experience with the healthcare system and thus may have had more opportunities to develop mastery in dealing with healthcare situations. Expectations regarding the likelihood of receiving a diagnosis of cancer might be different in older woman, whereas the diagnosis may be perceived as more shocking or threatening to younger women. Additionally, the extent of surgery might vary with age (e.g., younger women experiencing more aggressive treatment).

The concepts of perception and appraisal may explain the increased severity of symptom distress among more educated women. As in the case of age, education may contribute to a different impression of the meaning and significance of the cancer experience, resulting in more expression of symptom distress.

Marital status and symptom distress: This study found a relationship between marital status and symptom distress

Table 2. Significant Correlations Among Symptoms Over Time

Symptom	Symptom Correlates at Three Intervals		
	Discharge	**Three Months Postdischarge**	**Six Months Postdischarge**
Appearance	Concentration, outlook	Appetite, concentration, outlook	Outlook
Appetite	Concentration, insomnia, nausea severity, outlook, pain frequency	Appearance, fatigue, insomnia, nausea frequency, nausea severity, pain frequency	Bowel pattern, concentration, outlook
Bowel pattern	Nausea frequency, nausea severity	Fatigue, nausea severity	Appetite, nausea frequency, outlook
Breathing	–	Pain severity, nausea severity	Insomnia, pain frequency
Concentration	Appearance, appetite, fatigue, insomnia, outlook	Fatigue, outlook	Appetite, outlook, pain frequency
Fatigue	Concentration, insomnia, outlook, pain frequency	Appetite, bowel pattern, concentration, nausea frequency, nausea severity, outlook	Concentration, nausea severity, pain frequency
Insomnia	Appetite, concentration, fatigue, outlook	Appetite, pain severity	Bowel pattern, concentration, fatigue, insomnia, nausea frequency, nausea severity, outlook, pain frequency, pain severity
Nausea frequency	Bowel pattern, nausea severity	Appetite, fatigue, nausea severity, pain frequency	Bowel pattern, insomnia, nausea severity, outlook
Nausea severity	Appetite, bowel pattern, nausea frequency, outlook	Appetite, bowel pattern, breathing, fatigue, nausea frequency	Insomnia, fatigue, nausea frequency
Outlook	Appearance, appetite, concentration, fatigue, insomnia, nausea severity	Concentration, fatigue	Appearance, appetite, bowel pattern, nausea frequency, pain frequency, concentration
Pain frequency	Appetite, fatigue, pain severity	Nausea frequency, pain severity	Concentration, fatigue, insomnia, outlook, pain severity
Pain severity	Pain frequency	Breathing, insomnia, pain frequency	Pain frequency

at three and six months postdischarge. Subjects who were married or living with partners reported more symptom distress than did the remainder of the subjects. The mechanism of this phenomenon is unclear. The presence or absence of significant interpersonal relationships affects the appraisal of life events. Research has demonstrated relationships between symptoms and psychosocial resources, gender, and perceived stress (Leidy, 1990). In addition, Tishelman, Taube, and Sachs (1991) suggested that reinforcement from supportive individuals legitimizes the experience of symptom distress, leading to increased expression of such distress. Sources of informational, tangible, and emotional support have been found to vary with marital status. Married women have identified their husbands as their most frequent providers of informational, tangible, and emotional support. Women who were widowed, divorced, or separated identified their children as their most common emotional support sources, other professionals as their most common informational support providers, and paid helpers as their most common tangible support sources (Friedman, 1993). Marital status might affect the perception of role demand, with the partner either sharing in tasks or requiring that the patient achieves a given level of role function despite

surgery. The presence of a partner might affect the patient's own demands for role performance, and the presence of a marital relationship might alter characteristics of a woman's support system. The support system for married women might be restricted to their partner or to similar couples, whereas unmarried women might have a large support system composed of friends or they might be isolated from others. In this research, no relationship was found between symptom distress and whether subjects lived alone or with others.

Other patient and clinical characteristics: The current study did not demonstrate relationships between symptom distress and any other patient characteristics such as income, employment status, religion, or race. No relationships were identified between symptom distress at any time and clinical characteristics, including the number of comorbidities or initial complications and the length of hospitalization. The variance in the sample's data on stage of disease was insufficient to permit any conclusions about its relationship to symptoms.

Comorbidities have been recognized as complicating the treatment of cancer in older adults; however, weaknesses in the development of their conceptualization and measure-

Table 3. Relationship of Marital Status to Symptom Distress

Group Statistics	n	X̄	SD	t	df	p	X̄ Difference	Lower 95% Confidence Interval	Higher 95% Confidence Interval
Three months postdischarge									
Frequency of nausea									
• Single	26	1.12	0.326	–	–	–	–	–	–
• Married	30	1.50	0.777	–2.473	40.053	0.018	–0.38	–0.70	–0.07
Frequency of pain									
• Single	26	1.62	0.941	–	–	–	–	–	–
• Married	30	2.37	0.964	–2.945	53.210	0.005	–0.75	–1.26	–0.24
Six months postdischarge									
Insomnia									
• Single	25	1.16	0.624	–	–	–	–	–	–
• Married	30	2.03	1.098	–3.697	47.275	0.001	–0.87	–1.35	–0.40
Frequency of pain									
• Single	25	1.56	0.651	–	–	–	–	–	–
• Married	30	2.07	0.980	–2.290	50.659	0.026	–0.51	–0.95	–0.06
Fatigue									
• Single	25	1.72	0.980	–	–	–	–	–	–
• Married	30	2.23	0.774	–2.125	45.306	0.039	–0.51	–1.00	–0.03
Bowel pattern									
• Single	25	1.04	0.200	–	–	–	–	–	–
• Married	30	1.40	0.855	–2.234	32.763	0.032	–0.36	–0.69	–0.03
Concentration									
• Single	25	1.16	0.374	–	–	–	–	–	–
• Married	30	1.57	0.817	–2.436	42.199	0.019	–0.41	–0.74	–0.07
Total symptom distress									
• Single	25	16.60	2.990	–	–	–	–	–	–
• Married	30	20.27	4.890	–3.413	48.917	0.001	–3.67	–5.83	–1.51

ment limit their applicability to research and clinical practice (Satariano & Silliman, 2003). Comorbidity has been related to prognosis (Given, Given, Azzouz, & Stommel, 2001; Satariano & Silliman), but its relationship to symptom experience remains unclear. The number of symptoms, although associated with advanced disease, is thought to affect patient outcomes, including morbidity (Dodd, Miaskowski, et al., 2001). Among older patients with lung cancer, the number of comorbidities has been correlated with symptom severity (Kurtz, Kurtz, Stommel, Given, & Given, 1999). Symptom severity in this setting, in turn, has been correlated with a loss of physical functioning, which is a healthcare outcome (Kurtz et al., 2000).

Predicting symptom distress: Stepwise multiple regression analysis was used to identify variables that predicted significant variance in total symptom distress measures at any point in time. Education accounted for a small but

Table 4. Predictors of Total Symptom Distress Score (SDS) at Three Points in Time

Time Period and Predictor	R²	β	F	p
Discharge				
Education	0.115	0.339	7.165	0.01
Three months postdischarge				
SDS at discharge	0.081	0.284	4.730	0.03
Six months postdischarge				
SDS at three months postdischarge	0.295	0.543	21.750	0.00

statistically significant amount of the variance in symptom distress at discharge. At three months postdischarge, the only significant predictor was the score for symptom distress at time 1. Likewise, at six months postdischarge, the significant predictor was the previous measure, total symptom distress at time 2. The predictive value of the three-month score for the six-month score was greater in magnitude and significance than the other predictors.

Conclusions

Symptom distress declined slowly in the six months following breast cancer surgery. The rate of change was greater from discharge to three months postdischarge than from three to six months postdischarge. Fatigue, frequency of pain, outlook, and insomnia remained primary sources of symptom distress throughout the six months of observation, independent of the length of time since surgery. In this study, younger women and those who were more highly educated experienced more symptom distress early in the postoperative period. Relative rankings for the type of symptom distress remained the same over time. Subjects who reported more symptom distress early in their postoperative course continued to report more symptom distress throughout the six months, whereas those who reported less early symptom distress continued to report less symptom distress throughout the six months. Subjects who were married or living with a partner reported greater distress from selected symptoms at three months and greater total symptom distress at six months postdischarge. Interactions among symptoms are complex and are not well modeled with statistical analysis.

This research is limited because it did not consider the possible effects of postoperative chemotherapy, biotherapy, radiation, or hormone therapy given during the period of the study; however, the study does describe the symptom experience of a group of older women following surgery. This population-based study sheds light on the nursing care needs of a population defined by age rather than by use of adjunct therapies. The current study's research has clinical implications for practicing nurses and theoretical implications for researchers.

Recommendations for Clinical Applications

When caring for older women having breast cancer surgery, nurses should inquire about symptom distress at each encounter and provide appropriate anticipatory guidance. Nurses should expect to find distress related to fatigue, frequency of pain, outlook, and insomnia but appreciate the individuality of the symptom distress experience. The use of a standardized instrument, such as the Symptom Distress Scale, should be accompanied by discussion with the patient. However, nurses should note that allowing or encouraging the expression of symptom distress could result in increased expression of such distress. The increased expression could be incorrectly assumed to reflect an increase in perceived symptom distress when compared to women who are less expressive. In other words, nurses cannot always assume that women who express their distress experience more distress and, conversely, women who do not express distress do not experience distress.

Because breast cancer is so prevalent, patients often are compared to others with the disease. Nurses should look for higher levels of distress in married women, particularly at three months postdischarge. Nurses should anticipate greater symptom distress in patients who are younger and more educated and in those with more severe, earlier symptom distress. Symptoms rarely occur in isolation, and their interactions are complex. Patients with one symptom are likely to have others as well. Patients should be asked about other symptoms and their impression of how the symptoms might be related. Because the greatest change in symptom distress occurs during the first three months after discharge, little change during this period of time is a matter of concern. Nurses should act to minimize symptom distress earlier to minimize it later.

Total symptom distress may be reduced substantially by a well-targeted intervention that decreases distress caused by several symptoms. Topics of interest for clinicians include methods of treating more than one symptom at a time and strategies for establishing symptom treatment priorities. Approaches in which nurses can leverage the side effects of a primary symptom treatment to diminish other symptoms are important to identify. Nurses should consider treatment options for one symptom that may result in the improvement of another symptom. For example, the side effects of one treatment may be seen as therapeutic for another symptom, such as when an analgesic medication that has a side effect of drowsiness is given at bedtime to a patient with pain and insomnia. The patient may experience pain relief while being able to fall asleep easier.

Research Implications

Researchers should study the natural history over time of symptoms relative to each other, clarifying relationships such as interaction and causation. Researchers should seek to identify contextual variables that affect the magnitude of symptoms, individually and in combination, identifying the phenomena that can be manipulated therapeutically to diminish symptom distress. To clarify the role of social support in adaptive responses to illness, the mechanisms of the relationship between marital status and symptom distress should be identified clearly.

Another topic of interest to researchers is the relationship of symptom distress to symptom intensity and the critical attributes of the nurse-patient interaction that mitigate symptom distress. A novel way of understanding patient characteristics might include determination of an individual symptom distress style (i.e., the way a person has exhibited symptom distress in the past and presumably will do so in the future). An individual's personal symptom distress style would be defined by the conditions under which distress has occurred, how it was perceived and expressed, its extent and duration, what relieved it, what exacerbated it, and its effect on the person's functional status. If research establishes that individuals have unique personal symptom distress styles, knowledge of a person's history of symptom distress might be useful in anticipating the experience in a new situation and in planning care.

This article contributes to the body of literature describing patients' experiences with symptoms associated with cancer treatment. The findings suggest a need for strategies based on understanding of the relationship between patient characteristics and symptom distress. Additional work is needed to understand the effect of symptoms, individually and in combination, on patients' survival and quality of life.

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April 26, 2006

Dr. Amy Laufer Kenefick
School of Nursing
University of Connecticut
Storrs, CT 06269-3044

Dear Dr. Kenefick:

This will confirm that your joint appointment has been approved as Assistant Professor, in the Department of Medicine, University of Connecticut School of Medicine, effective April 1, 2006 through December 31, 2006.

You will retain your principal appointment with the University in the School of Nursing.

Sincerely,

Peter J. Deckers md

Peter J. Deckers, M.D.
Executive Vice President for Health Affairs
Dean, School of Medicine

sas
cc: Dean's File
      Department Head (primary and joint)
      Human Resources File

University of Connecticut
School of Nursing

Deborah A. Shelton, PhD
Associate Professor
Associate Dean

Amy Kenefick, PhD, RN, CNM, FNP
Associate Professor
University of Connecticut
School of Nursing
231 Glenbrook Drive U-2026
Storrs, CT 06269

April 26, 2006

Dear Dr. Kenefick:

On behalf of the UConn School of Nursing, I am pleased to inform you of an award of $5,000 for your study entitled *Translational Research in Breast Cancer Survivorship*. Your work continues to be impressive and well supported by your peers.

I look forward to hearing of your findings, and encourage you and your student and agency partners to present the findings of this award at the 2007 Athena Research Conference, scheduled for April 19, 2007. We encourage participation in other local conferences such as ENRS; the conference is in Providence on April 12-14, 2007, as well as CT Sigma Theta Tau which is likely to be in March of next year. Please remember that a final report in publication format is due within one year.

If I or the Center for Nursing Research can be of further assistance, please let me know. Good luck with your study.

Sincerely yours,

Deborah Shelton, PhD, RN, BC

RELATIONSHIP OF NEUROCOGNITIVE FUNCTION TO BREAST CANCER TREATMENT AND INDUCED MENOPAUSE

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Introduction: Women who have received chemotherapy for breast cancer report difficulties with neurocognitive function (NCF), particularly memory and concentration. Characteristics and implications of these difficulties are not well defined. The symptoms that they report resemble symptoms reported by women who experience menopause. Some women who have chemotherapy also experience induced menopause. The role that induced menopause may play in altering NCF is unclear.

Purpose: (1) describe characteristics of NCF over time in women who receive breast cancer chemotherapy as compared to women who experience surgically induced menopause and (2) identify any relationships between NCF and symptom distress or functional status.

Procedures: The proposed research is a prospective longitudinal descriptive study of NCF in premenopausal women who received breast cancer chemotherapy compared to premenopausal women who experience abrupt induced menopause as a result of total abdominal hysterectomy/oophorectomy. Comparison of these two groups may clarify the contribution of chemotherapy and induced menopause to changes in NCF, leading to interventions that will contribute to overall well being during treatment and survival.

Instruments include an investigator-developed demographic and medical history form; the Wechsler Adult Intelligence Scale (WAIS-III); the Symptom Distress Scale (SDS); the Enforced Social Dependency Scale (ESDS); the State-Trait Anxiety Scale (STAI); and the Center for Epidemiological Studies Depression Scale (CES-D).

Data Collection Points are (1) baseline, before chemotherapy or surgery; (2) 6-8 weeks after initiation of chemotherapy or surgery; (3) 6 months after initiation of chemotherapy or surgery; and (4) 9 months after initiation of chemotherapy or surgery.

Analysis includes (1) Descriptive statistics to describe characteristics of the sample, characteristics of NCF, symptoms and functional status at each of the data collection points. (2) Inferential statistics to identify the longitudinal relationship of NCF and chemotherapy; identify the relationship between induced menopause and NCF. Compare NCF changes in breast cancer chemotherapy patients to hysterectomy/oophorectomy patients, identify relationships between NCF, symptom distress and functional status.

Results to date: This pilot study will include 25 women with breast cancer chemotherapy and 25 women with hysterectomy/oophorectomy but no chemotherapy. Data collection is under way.

Significance: The impact of persistent and late effects of therapy on the quality of life of the nearly two million breast cancer survivors is not fully known. As survival rates for women with breast cancer increase, so does the importance of considering quality of life outcomes of treatment. Results of this research will increase the understanding of the interrelationships between neurocognitive function, breast cancer treatment and induced menopause. Findings will influence the design of clinical trials and treatment protocols; the development of interventions to improve quality of life in women undergoing treatment for breast cancer; and improve the validity of the informed consent process by allowing the patient to be better informed about treatment side-effects.